BUYER-SIDE AUCTION DYNAMIC PRICING AGENT, SYSTEM, METHOD AND COMPUTER PROGRAM PRODUCT

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Background

Field of the Invention

The present invention is related generally to online auctions, and more particularly to buyer side bidding tools.

Related Art

One of the first widely popular website types facilitated by widespread user access to the Internet, is the online auction site. Online auctions, initially in the business to consumer (B2C) space, such as, e.g., EBAY, and Yahoo!Auctions enable many consumer clients with a computer and an Internet Service provider (ISP) account, to participate as a buyer (i.e., bidder user, or member), or seller (or biddee) in an auction. With the advent of business to business (B2B) electronic commerce auction sites such as, e.g., Freemarkets, business buyers in a procurement department can similarly bid on, e.g., supplies, parts, and vendor equipment.

Conventionally, online auctions can occur 24 hours per day, seven days per week. Unfortunately, a bidder is not able to monitor the status of an auction continually. It is desirable that tools to automate the bidding process be made available to bidders. Unfortunately, auction sites also continually create countermeasures to make it difficult to automate bidding.

Conventional auctions include bidding rules and bidding parameters. Unfortunately, bidding rules and parameters can change from time to time.

Conventionally, tools designed to automate the bidding process for a bidder (i.e., on the buy side) have been standalone workstation software based and lack various desirable features. Unfortunately, as bidding rules and parameters change and counter

measures are added, the standalone software based tools no longer work. Thus, it is desirable that an improved tool be provided that overcomes the shortcomings of conventional solutions.

Summary of the Invention

The present invention is directed to a system, method and computer program product that automates many of the processes of the buyer-side of a dynamic pricing or auction pricing transaction executed on the Internet. An exemplary embodiment of the present invention is available from Argosy Omnimedia, Inc. of Rockville, Maryland U.S.A. The technology developed and commercialized by Argosy, according to the present invention, includes, in an exemplary embodiment, any of several, advantageous, separate components integrated into a convenient program agent that can track performance of a given auction and can conduct a bidding transaction on behalf of the buyer on a specific auction site or sites.

The Buyer can select the targeted auction and auctioned item (product) from a result list. The result list can be created by a meta search engine. One or more items, i.e., products, can then be selected to receive automated bids placed by the buyer's bidding proxy.

Further features and advantages of the invention, as well as the structure and operation of various exemplary embodiments of the invention, are described in detail below with reference to the accompanying drawings. In the drawings, like reference numbers generally indicate identical, functionally similar, and/or structurally similar elements. The drawing in which an element first appears is indicated by the leftmost digits in the corresponding reference number.

Brief Description of the Drawings

The foregoing and other features and advantages of the invention will be apparent from the following, more particular description of an exemplary embodiment of the invention, as illustrated in the accompanying drawings.

FIG. 1 depicts an exemplary embodiment of a flow diagram illustrating an AgentProxy main web site page that can provide a central aggregation and launch point for the service according to the present invention;

FIG. 2 depicts an exemplary embodiment of a flow diagram illustrating a Cascaded Bid service that can enable the buyer to select multiple auctions for the same or several different items and can enter them into a linked, bid cascade according to the present invention;

FIG. 3 depicts an exemplary embodiment of a flow diagram illustrating a meta-search engine component that can provide a convenient way for the buyer to search multiple auction sites and aggregate the results into a single, sortable result set according to the present invention;

FIG. 4 depicts an exemplary embodiment of a flow diagram illustrating a meta-registration engine component that can provide a convenient, centralized service that can create registration accounts for the buyer on each of the dynamic pricing or auction sites that are tracked by the product according to the present invention;

FIG. 5 depicts an exemplary embodiment of a flow diagram illustrating a mybid portfolio that can provide a centralized area where active bids of the buyer can be stored and displayed according to the present invention;

FIG. 6 depicts an exemplary embodiment of a flow diagram illustrating a myaccount component that can provide a convenient area for the buyer where the buyer can manage information pertaining to the account of the buyer, according to the present invention;

FIG. 7 depicts an exemplary embodiment of a flow diagram illustrating a bid engine component that can include bid automation business process logic that can manage the agent and proxy functionality, according to the present invention;

FIG. 8 depicts an exemplary embodiment of a flow diagram illustrating a fastscan bid engine component that can be designed to take advantage of "thread pool," software component based run-time architectures, according to the present invention;

FIG. 9 depicts an exemplary embodiment of a flow diagram illustrating a bidagent component that can perform the actual bidding on behalf of the Buyer/Bidder, according to the present invention;

FIG. 10 depicts an exemplary embodiment of a flow diagram illustrating a proxied peer-to-peer distributed server bid engine of the present invention; and

FIG. 11 depicts an exemplary embodiment of a flow diagram illustrating a monitoring process that tracks a maximum bid value.

Detailed Description of an Exemplary Embodiment

A preferred embodiment of the invention is discussed in detail below. While specific implementations are discussed, it should be understood that this is done for illustration purposes only. A person skilled in the relevant art will recognize that other components and configurations may be used without parting from the spirit and scope of the invention.

The present invention is directed to a system, method and computer program product including several inter-working components that are designed to provide a convenient, programmable product for selecting targeted products on dynamic pricing or auction sites, entering the bidding parameters and then allowing the software driven, server based agent to proxy the buyer's bidding transactions in order to win an auction on a given product or products at the lowest possible price with minimal manual intervention on the part of the buyer user.

The components of the invention can include, in an exemplary embodiment:

- AgentProxy Main Site Page;
- Cascaded Bid;
- Meta-Search Engine;

- Meta-Registration Engine;
- MyBid Portfolio;
- MyAccount;
- Bid Engine;
- FastScan Bid Engine;
- Proxied Peer-to-Peer Distributed Server Bid Engine; and
- Maximum Bid Monitoring Process.

Each component is described below with reference to the attached FIGs. 1-10. A buyer or buyer user is another term for a member regardless of whether a subscription or transaction fee is charged or not.

FIG. 1 depicts an exemplary embodiment of a flow diagram 100 illustrating an AgentProxy main web site page that can provide a central aggregation and launch point for the service. The page can provide links to the services or components within the site and can provide access to the authentication and authorization service that can identify a user as a registered member or can provide a link to a registration page where a user can become a registered member by, e.g., entering contact information, preferences and profile information into the AgentProxy site.

FIG. 2 depicts an exemplary embodiment of a flow diagram 200 illustrating a Cascaded Bid service that can enable the buyer to select multiple auctions for the same or several different items and can enter them into a linked, bid cascade ("cascade"). The cascade can be a list of auctions that close at different times. The cascaded bid of FIG. 2 can service and can track the proxied bidding of each item in a cascade. The bid parameters and prioritization of bid placements can be a function of the sequentially temporal nature of the auction close events and the application of statistical algorithms can evaluate win probability based on, e.g., current price, time to auction close and relative differential price as a function of, e.g., the average market price for the same or similar item. As bids on cascaded auctions are sequentially executed, the cascade can

continue to proxy bids until one auction in the cascade is won. Once an auction in the cascade is won, in an exemplary embodiment, all subsequent auctions can be cancelled.

FIG. 3 depicts an exemplary embodiment of a flow diagram 300 illustrating a meta-search engine component that can provide a convenient way for the buyer to search multiple auction sites and aggregate the results into a single, sortable result set. The buyer can enter in parameters such as the brand name or the model number of a particular item. The meta-search engine can then proxy this request to the various auction site specific search engines. The results can then be aggregated, sorted and displayed to the user as one integrated result list identifying which auction site is conducting auctions for each item. The buyer can then click on a particular item's identification code or description in order to link to the auction site to obtain more information on the item prior to entering it into the Bid Portfolio of the buyer user.

FIG. 4 depicts an exemplary embodiment of a flow diagram 400 illustrating a meta-registration engine component that can provide a convenient, centralized service that can create registration accounts for the buyer on each of the dynamic pricing or auction sites that are tracked by the product. The meta-registration engine component can collect a super-set of the information necessary to register on all of the sites and then can programmatically navigate through the registration process of each site as the agent of the buyer and can enter the necessary information into each one of the auction sites. Any exception conditions can be logged and displayed to the buyer. The buyer can then resolve any of these exception conditions manually or programmatically as needed.

FIG. 5 depicts an exemplary embodiment of a flow diagram 500 illustrating a mybid portfolio that can provide a centralized area where the buyer's active bids can be stored and displayed. The buyer can enter bid automation parameters into each bid's record by, e.g., clicking on the auctioned item's informational record, or updating the information directly on the portfolio summary page. The buyer can also edit and modify parameters on active bids by increasing or decreasing maximum bids, time to close

activation and other bid or item related parameters. The buyer can also delete items in the portfolio regardless of whether bids have already been placed or not.

FIG. 6 depicts an exemplary embodiment of a flow diagram 600 illustrating a myaccount component that can provide a convenient area for the buyer where the buyer can manage information pertaining to the account of the buyer. Subscription levels can be modified or selected in the myaccount component. The buyer can also update preferences and profile information such as contact email address. Links to bid history on earlier auctions as well as current auctions can also be accessed through the myaccount area.

FIG. 7 depicts an exemplary embodiment of a flow diagram 700 illustrating a bid engine component that can include bid automation business process logic that can manage the agent and proxy functionality. The bid engine can scan the active bids for all buyers and can determine which bids are ready to execute based on their time to close activation parameter. The bid engine can then scan the targeted auction site to determine the current high bid and bidder. If the bidder is not the buyer, then the bid engine can prepare a bid based on computing the minimum incremental amount plus the current bid. If the computed bid is below the maximum bid parameter set by the buyer, then the engine can turn over the bid to the fastscan bid engine for processing. The bid engine can retrieve the Site Characterization information so that the fastscan bid engine can know how to navigate the site in order to execute the bid on behalf of the buyer. The bid engine can also retrieve all relevant buyer information for this account so that the proxied bid can be entered under the account of the buyer.

FIG. 8 depicts an exemplary embodiment of a flow diagram 800 illustrating a fastscan bid engine component that can be designed to take advantage of a "thread pool," software component based run-time architecture. Once a bid object is turned over to the fastscan bid engine, the object can persist in fast access random access memory (DRAM) until the bid closes or until a later time if the close time is delayed as a counter-measure response. Site Characterization information can include, e.g., the data set that can define

the unique navigational model, keywords, and name/value pairs that can describe to the Fast Scan and the Bid Agent how to inter-operate with the site in order to access the bid information and to emulate the buyer's interaction with the site as an agent for the buyer.

FIG. 9 depicts an exemplary embodiment of a flow diagram 900 illustrating a bidagent component that can perform the actual bidding on behalf of the Buyer/Bidder. The bidagent software can use information contained in the Site Characterization to emulate the interaction of the Buyer/Bidder. The bidagent can use the buyer's personal account information for the targeted auction site to authenticate, place and confirm bids that are automatically entered by the bidagent for the targeted auction. The bidagent can also use information contained in the Auction Site Characterization data set to determine how to programmatically navigate the pages of the site, identify which information is expected to confirm receipt of the correct page and what information needs to be input for each page. The internal state machine can progress through each state as the bid is entered and any exception conditions can be logged and handled at each of these states. The design of the bidagent can also support distribution of a Bid object to another server (see proxied peer-to-peer distributed server bid engine described further below with reference to FIG. 10) as a means of responding to an IP Block counter-measure and can also facilitate traffic management by load balancing the activated bid objects across a collection of federated or clustered servers. BidAgent can provide a counter-measure detection capability that can interpret specific kinds of response codes/pages and can then take actions to complete the bids through one of several alternatives such as, e.g., Time to Close Delay rescheduling and proxied server bid engine (see FIG. 10 below) responses.

FIG. 10 depicts an exemplary embodiment of a flow diagram 1000 illustrating a proxied peer-to-peer distributed server bid engine component that can support the distributed processing of a collection of activated bid objects across, e.g., multiple, federated, peer-to-peer servers. The distribution of activated bid objects across these servers can be managed by a distributed and periodically updated list of least recently used servers (LRUS). If a bid object is passed to the local server's proxied server bid engine, then the proxied peer-to-peer distributed server bidengine component ("proxied

server") process can look at a local copy of the LRUS table to select the most available, active server. A request can then be sent to this server to accept and process the bid object. The server can proactively acknowledge the receipt of this object or can respond to a request for confirmation after some time has expired. If a destination server denies receipt of the object, then the proxied server process can go to the next server on the list and can repeat the process until an acceptable server has been found.

FIG. 11 depicts an exemplary embodiment of a flow diagram 1100 illustrating a monitoring process that tracks the Buyer/Bidder's maximum value as compared to the current high bid for every activated bid object in the portfolio. In an exemplary embodiment, if the current bid is greater than the maximum bid value in the bid object, a notification can be sent via, e.g., email or through a wireless distribution system to alert the Buyer/Bidder of the fact that the maximum bid value of the Buyer/Bidder has been exceeded.

While various exemplary embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

Figure 1: AgentProxy.com Site Page

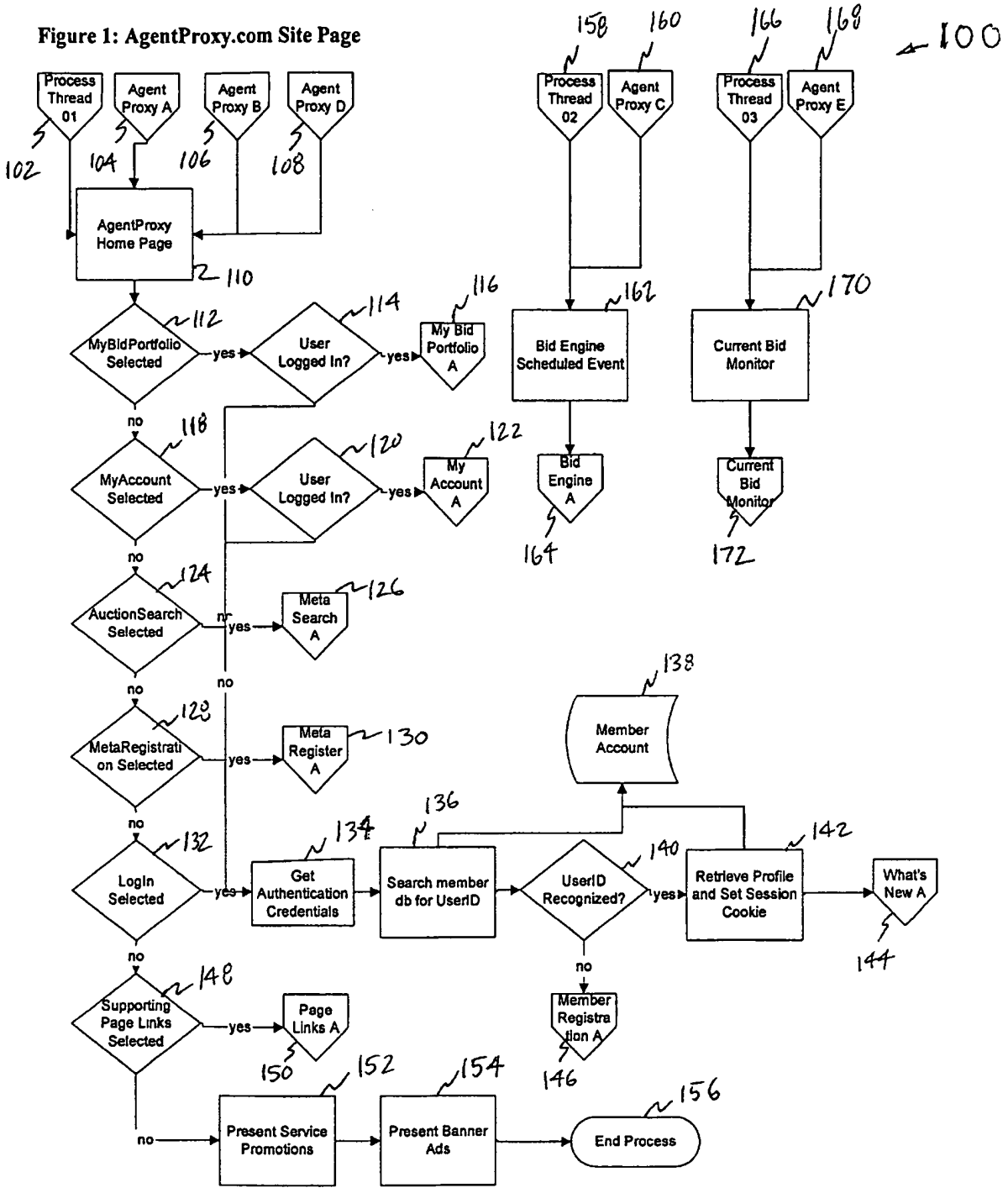

Figure 2: Cascaded Bid

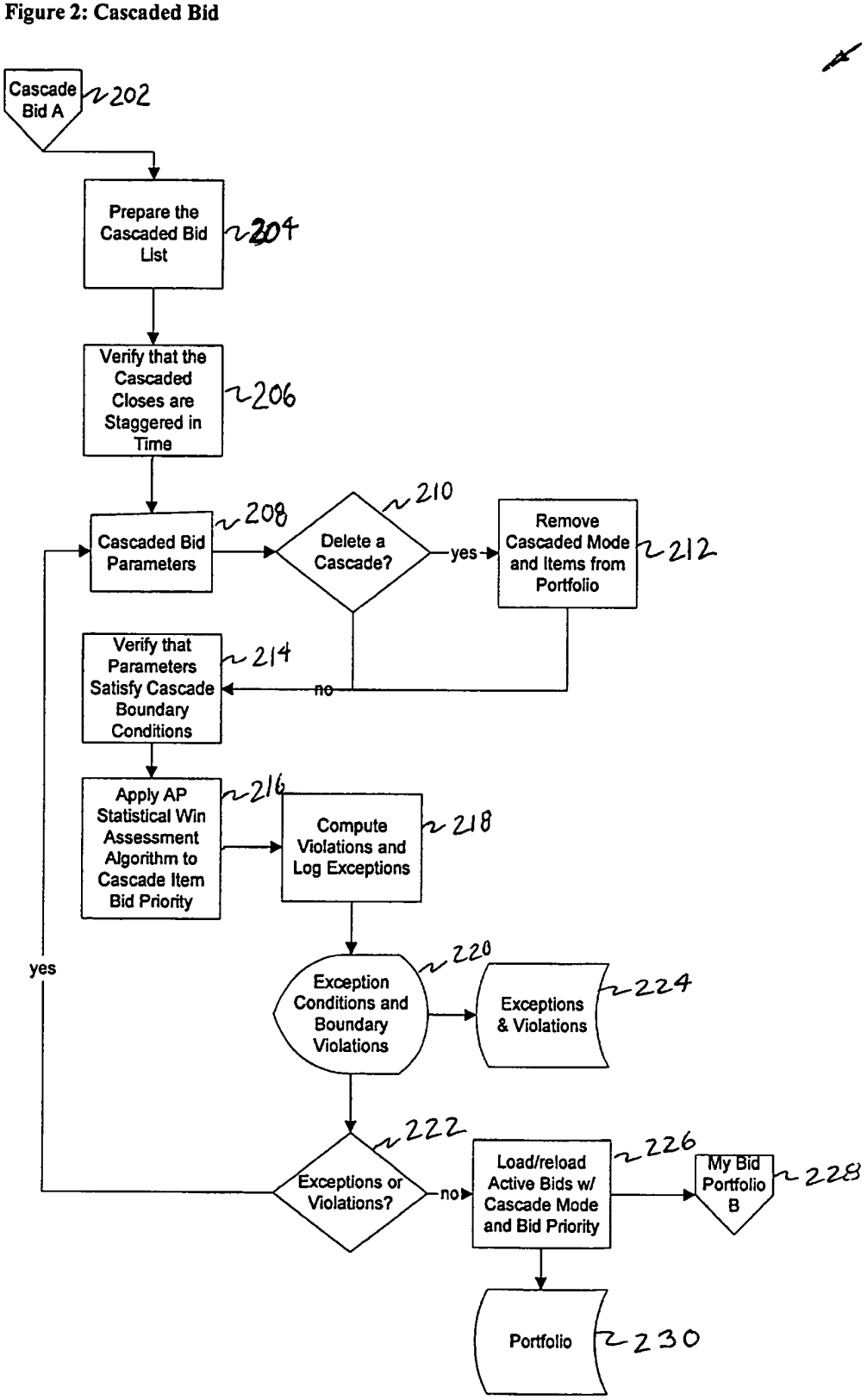

Figure 3: Meta Search

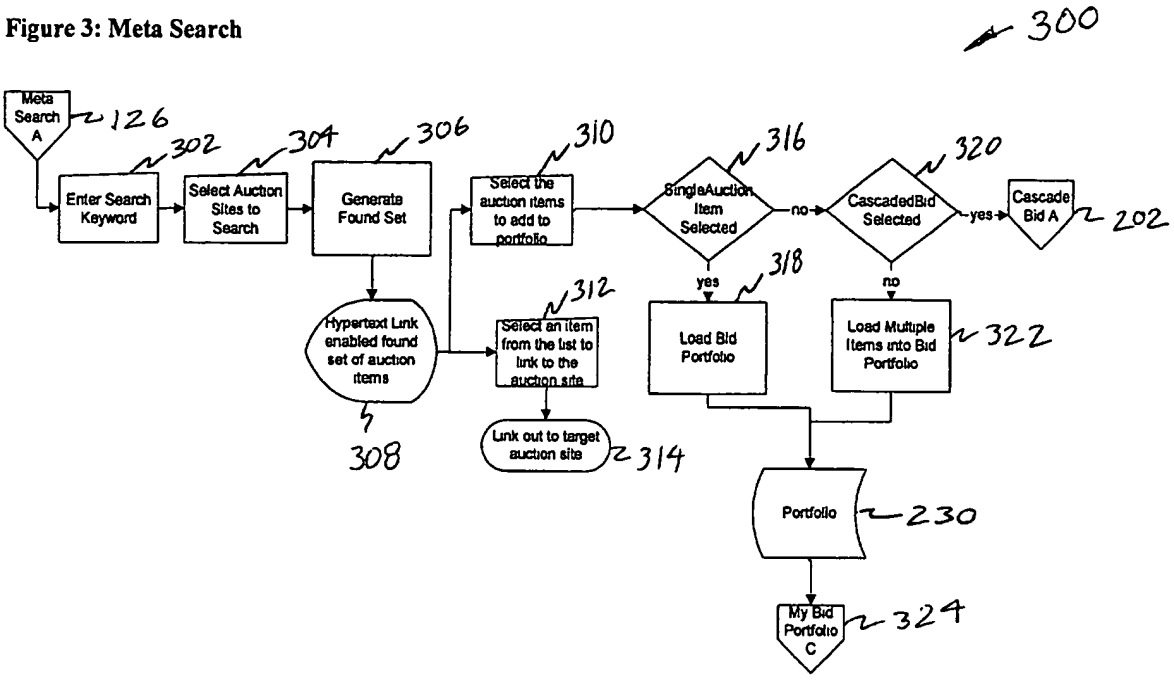

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Figure 4: MetaRegister

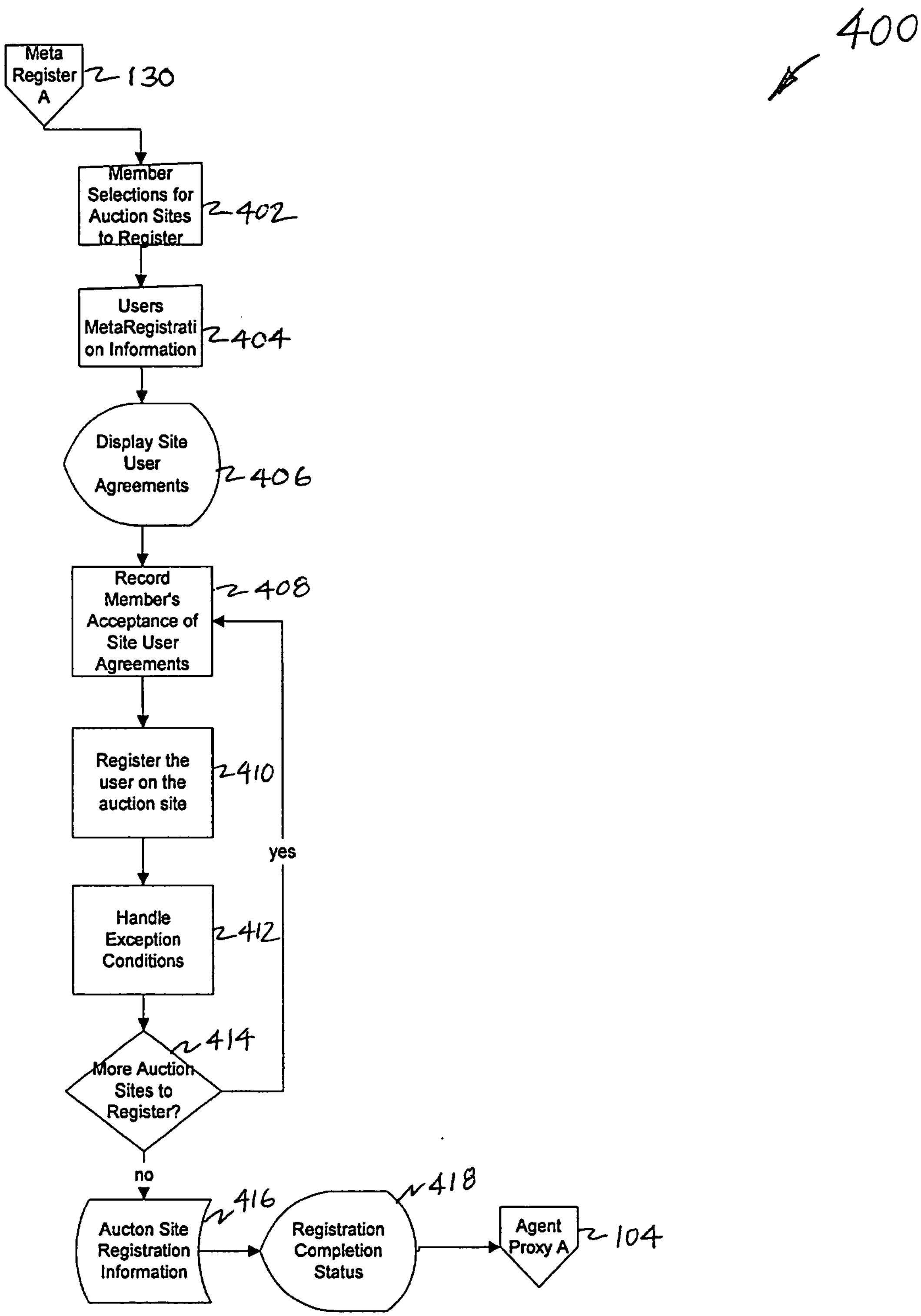

Figure 5: MyBid Portfolio

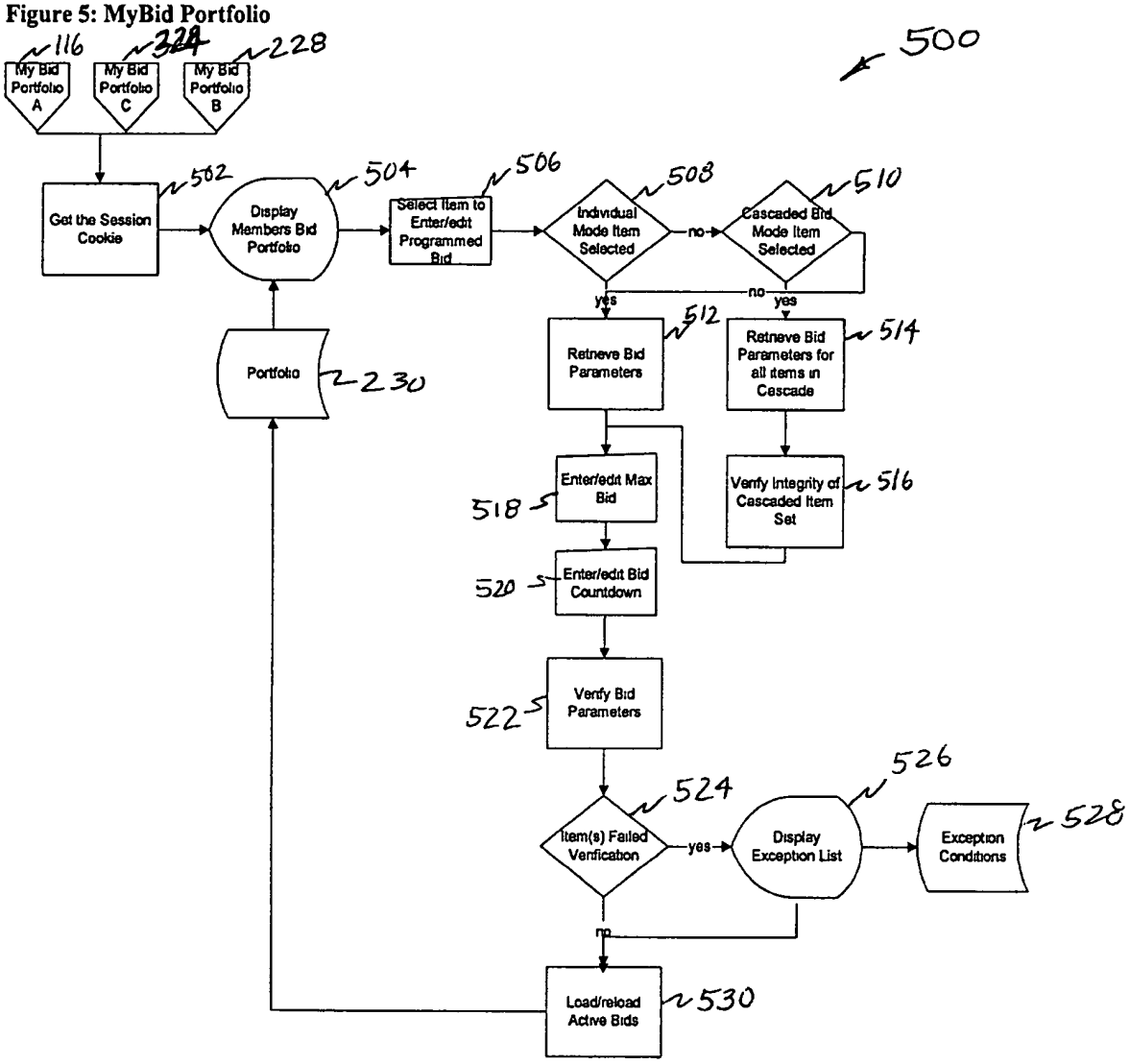

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Figure 6: MyAccount

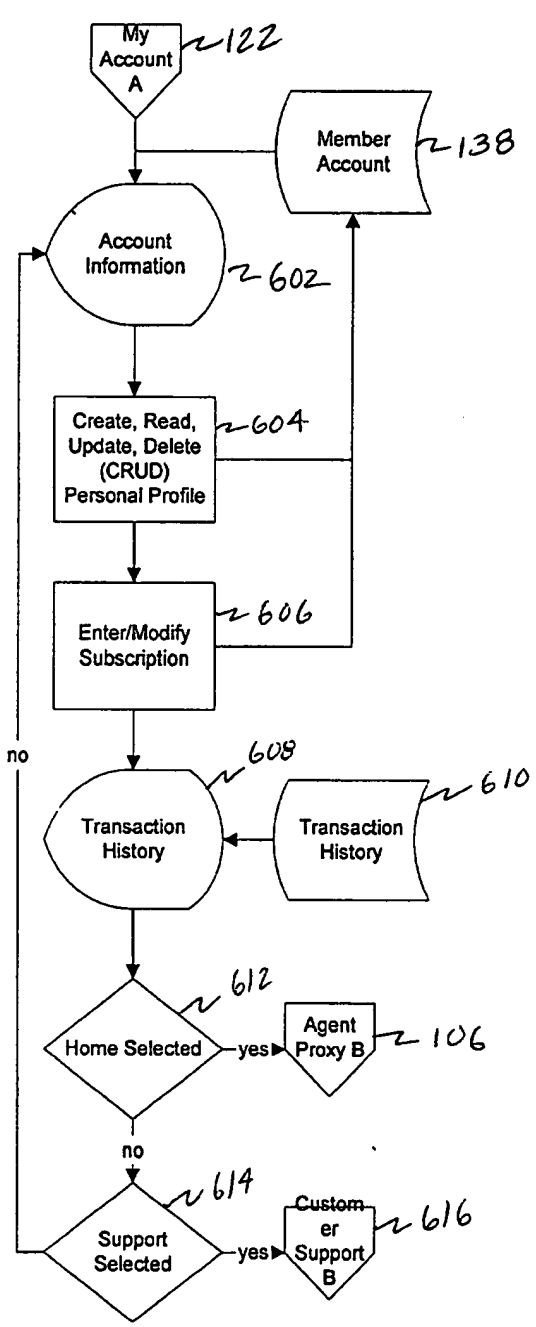

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Figure 7: BidEngine

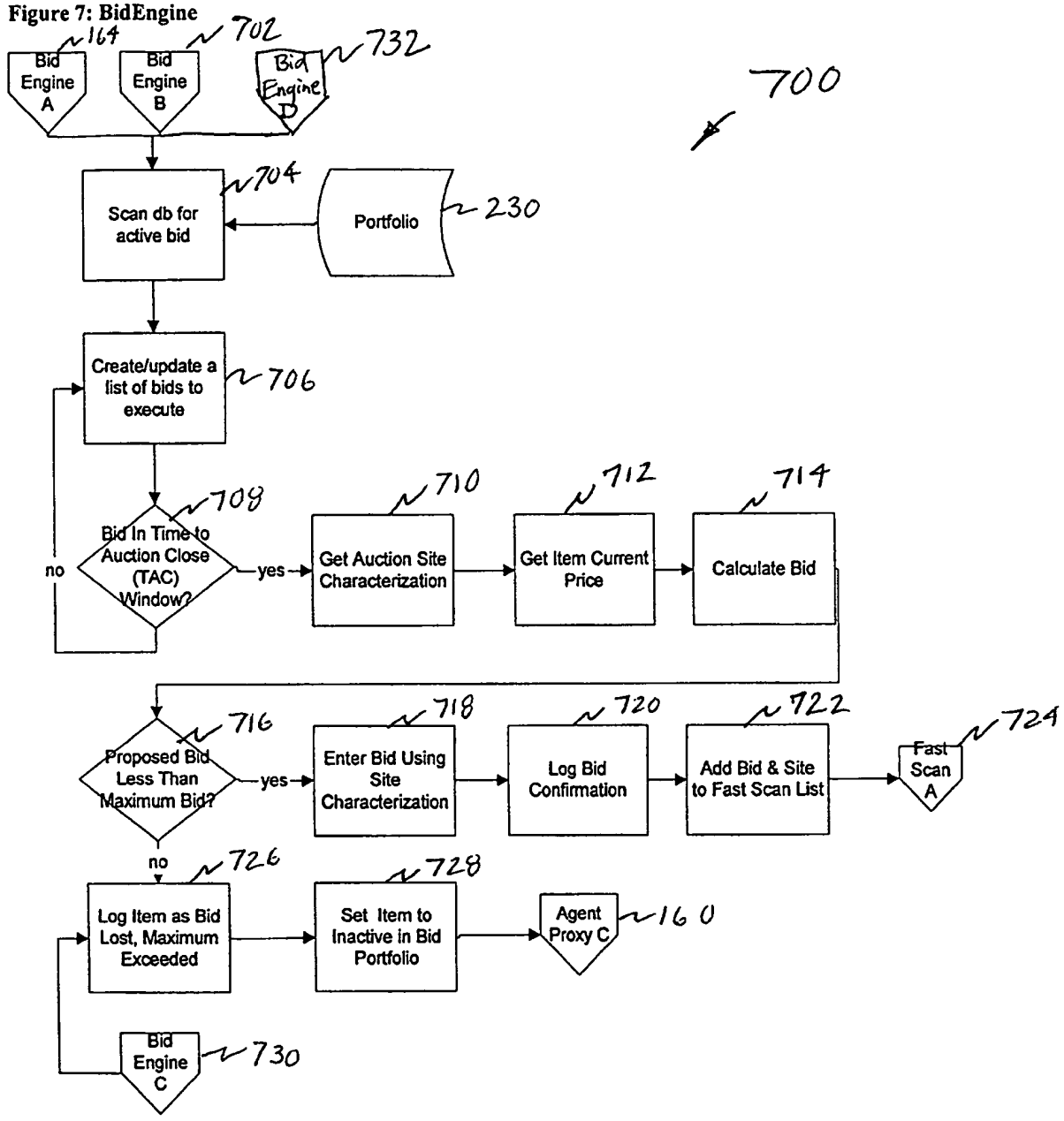

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Figure 8: FastScan Bid Engine

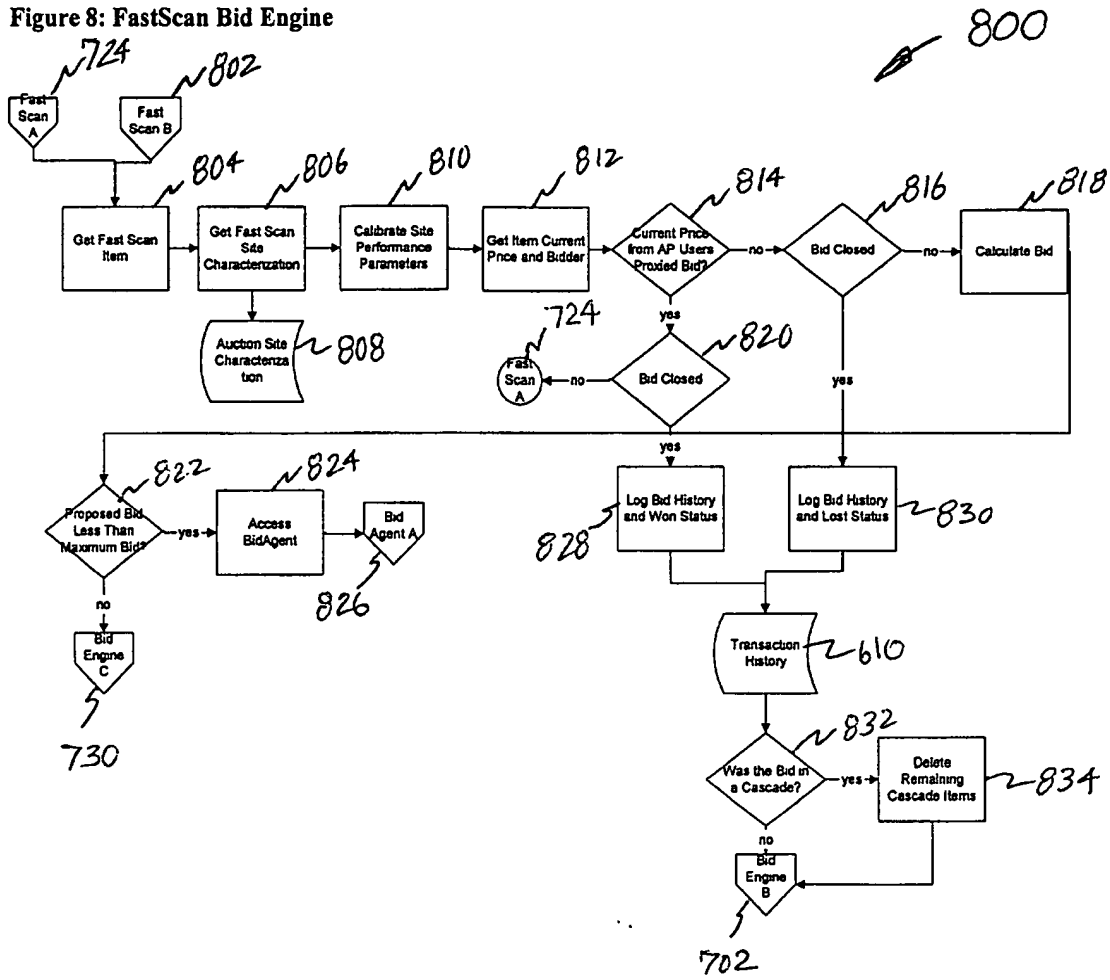

Figure 9: BidAgent

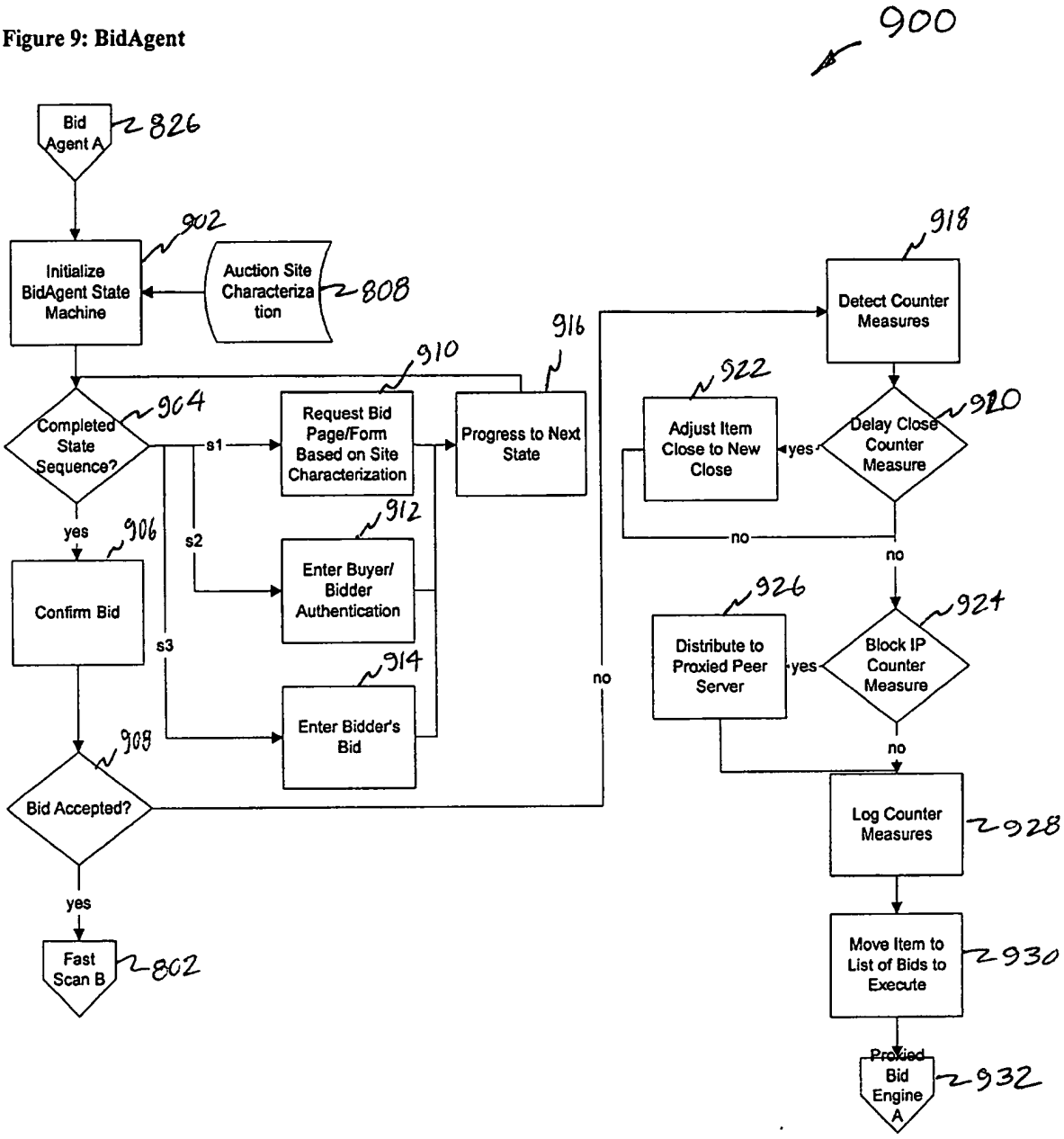

Figure 10: Peer-to-Peer Distributed Server

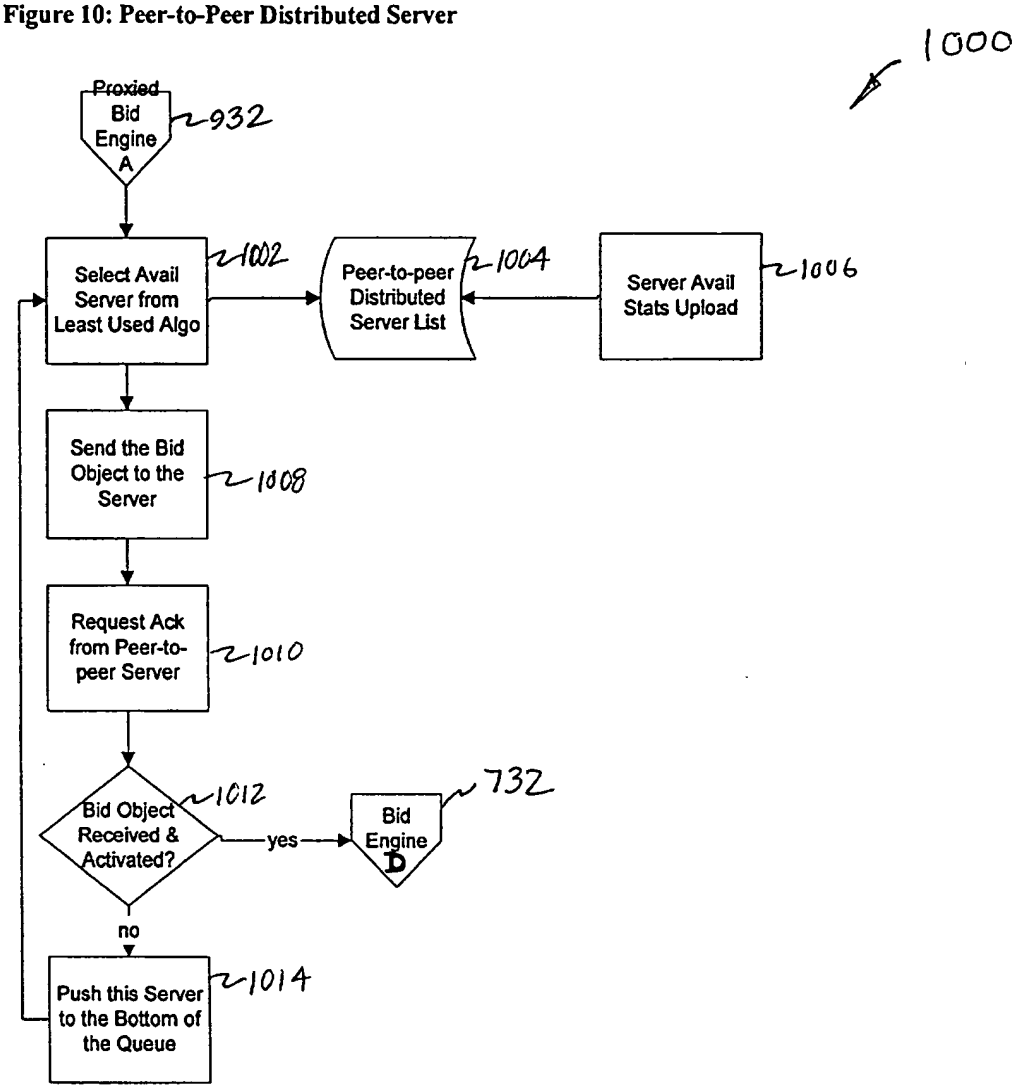

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Figure 11: Current Bid Monitor